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CENTRAL INTELLIGENCE AGENCY

REPORT

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## INFORMATION REPORT

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which was engaged in building two underground tunnels from Rakospalota to Budapest. These tunnels were for the purpose of pumping water from 60 to 70 spring-fed wells located on a small island in Szentendre into reservoirs in Budapest. These reservoirs were located at Janoshegy and Nemetvolgyi-ut in Buda, and in Pest on Margit Sziget, Sertesvaghid and Stefania-ut.

Description of the Budapest Water Works

1. Since the geological cross section of Budapest is variable, it was necessary to select a site for the water works which would assure permanent yield and expandable operations proportionate to the investment. This same end was kept in view in planning the equipment of the water works.
2. The island of Szentendre, which is situated in the Danube north of Budapest, was found to be the most suitable location. The pebbly subsoil and the proximity of the Danube made Szentendre an appropriate place for building wells, since water seepage from the Danube would keep the wells filled even if the springs should run dry or drought should lower the water table.
3. The pebbly structure of the subsoil is ideal and accounts for the fact that there has never been trouble about Budapest's supply of drinking water.

Location of Water Works

4. The water works is situated on an area five miles long at the southern part of Szentendre Island. The works consists of collecting wells, collecting filter conduits, gravity - fed conduits, lock shafts, the shafts of the two entrances to the tunnels under the Danube, and the four machine houses which pump the stored-up water into the network of pipes in the Danube tunnel.
5. Admission to this area is restricted to authorized personnel. It may not be entered from the upper island nor from the banks of the Danube. Farming and gardening are forbidden also in this area.

Method of Collecting Water

6. Subsoil or Danube water reaches the collecting wells after having been filtered through natural pebble and sand; precipitation arrives at the collecting wells after seeping down into the springs where, after mixing with spring water and being

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filtered through layers of sand and pebbles, it then passes through a perforated collecting filter conduit. See Enclosure (A) which represents a cross section of this collecting filter conduit. See also Enclosure (B) which represents the cross section of a collecting well.

7. The already purified water is pumped from the collecting wells into the gravity fed conduits which conduct it through the lock shafts into the two Danube tunnels from where it goes to the water works at Kaposztasmegeyer. The water works together with the pumps, channel it into the public water system. Surplus water is stored in cisterns and water towers in various parts of the city. See Enclosure (C) which represents a cross section of the gravity fed conduit. See also Enclosure (D) which represents a section of the Danube tunnel.

#### Water Sterilization

3. Since the water has already been cleared by filtration through pebbles and sand before arriving in the collecting wells, it is merely chlorinated before it enters the public water system. To free it completely of bacteria, the water is super-chlorinated at a ratio of 0.50-0.1 milligrams of chlorine per liter. Recently chlorine gas has been used rather than chlorated lime, because the former oxidizes the elements which give an unpleasant taste or smell to the drinking water.

#### Statistics

1. There is a total of 72 wells located along the right and left sides of the island. The collecting filter conduit is five miles long and runs parallel to the Danube. The gravity-fed conduits are each five miles long and run parallel to the axis of the island. The Danube tunnel which goes towards Dunakeszi is 550 meters, ie 600 yards long. The Danube tunnel towards Budapest is 675 meters, ie 738 yards long. The entire collecting filter conduit runs underground. Parts of the gravity-fed conduit had to be built above ground, but these parts have been protected with sod-covered embankments. The entrance shafts of the tunnels are also hidden by sod-covered embankments.

- end -

- ENCLOSURE (A): Cross Section of Collecting Filter Conduit  
 (B): Cross Section of a Collecting Well  
 (C): Cross Section of the Gravity Fed Conduit  
 (D): Cross Section of the Danube Tunnel  
 (E): Sketch of the Area Surrounding the Water Works

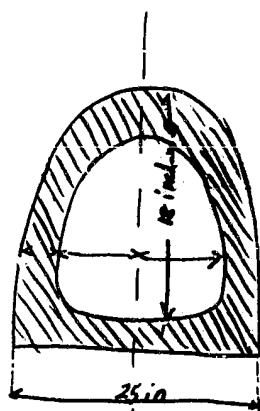
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ENCLOSURE (A)

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Collecting Filter Conduit



Cross Section

The conduit is made of concrete containing large pebbles and is completely permeable. It acts as a water filter. The conduit is laid on a bed of pebbles of various sizes.

Dimensions:

Width of base: 25"  
Interior height: 18"  
Thickness of Wall: 3"  
Zaradeh [Thickness at top?] 4"  
Length: 5 miles  
Shape: flattened oval

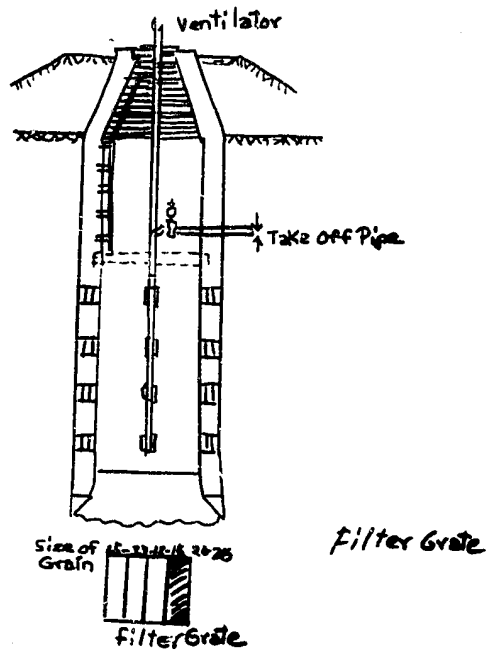
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ENCLOSURE (B)

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Collecting Well



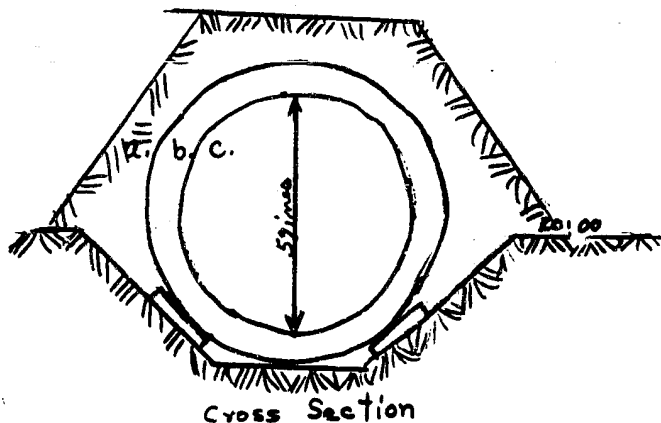
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ENCLOSURE (C)

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Gravity-fed Conduit

Structure:

The conduit is made of reinforced concrete, in which the reinforcing iron is inserted in the form of a hoop. Every 38 yards there is an expansion joint which is sealed with a bituminous plastic known as "Gumasko" and held on the exterior by a reinforced concrete ring. The inner wall of the conduit is smooth and coated with a substance that gives a glassy finish making it easy to keep clean.

- (a) Protective, sod - covered embankment
- (b) Concrete trough to protect conduit from sub-soil water
- (c) Iron props on which the conduit lies. There is a thin concrete filler between trough and conduit

Dimensions:

Inner diameter - 59"

Thickness of wall (b) - 14"

Length of conduits - each 5 miles

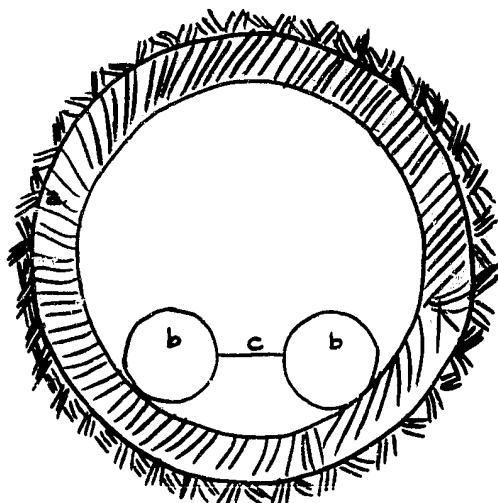
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ENCLOSURE (D)

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## Cross Section of Danube Tunnels



Both tunnels are made of cement sprayed on a pre-placed iron mounting. The inner surfaces are coated with potassium silicate, also. The shafts of both tunnels can be entered either via a spiral staircase or an elevator.

An iron pipe, 32 inches in diameter, has been laid on each side of the tunnels. The pipe is made of high-pressure cast iron (b). There is a sidewalk between the two pipes (c). The tunnel entrance shafts are hidden by a sod-covered embankment on three sides. Only the door is free.

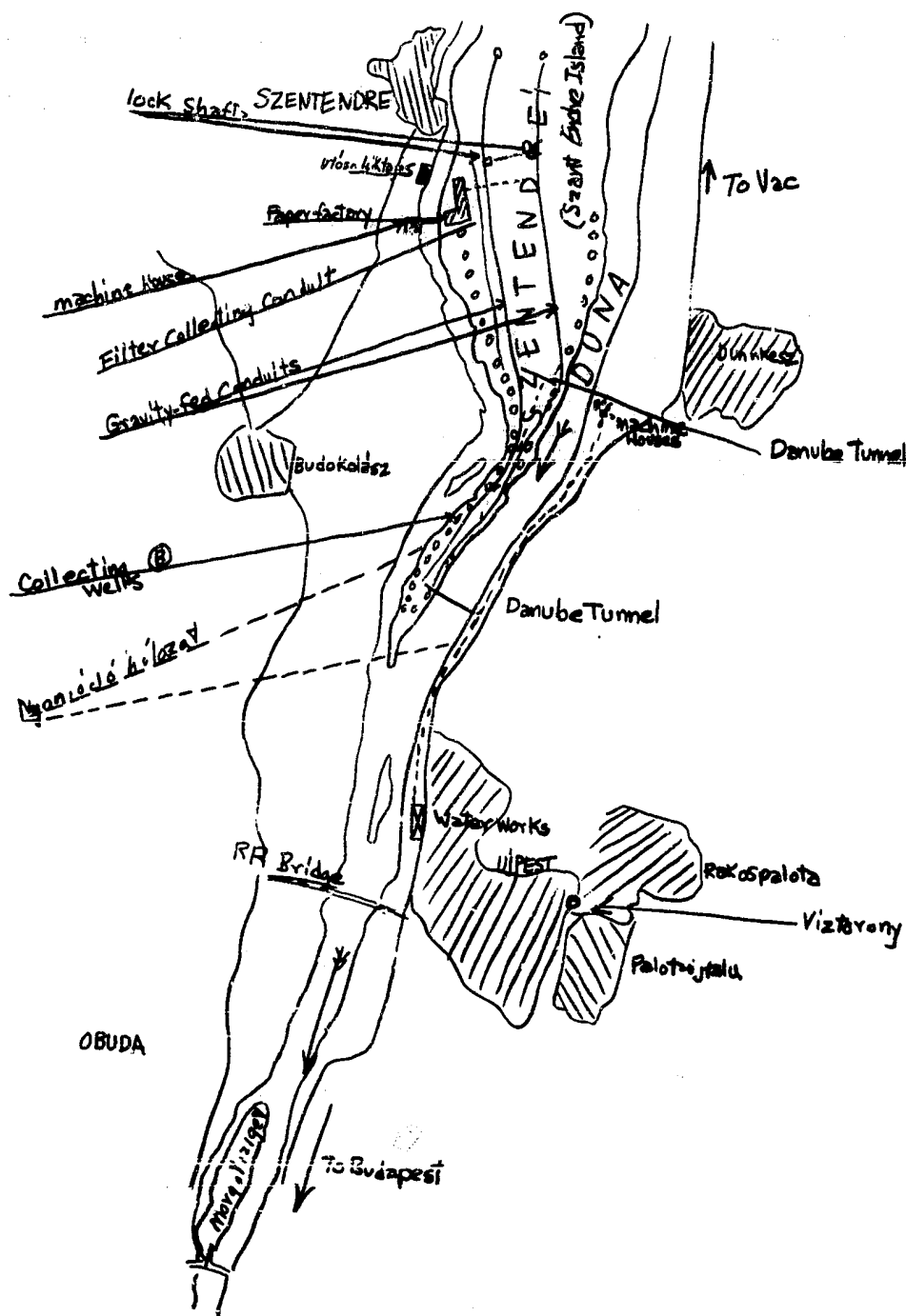
The northern tunnel is 600 yards long. The southern tunnel, 738 yards. The walls of both tunnels are 20" thick. The tunnels are each 12-14 yards beneath the Danube, which is 8-9 yards deep at those points.

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ENCLOSURE (1)

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